5 June 2013

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 “Asymptotical analysis of the Cauchy problem for the

modified Korteweg – de Vries equation

with step-like initial data”

We consider the Cauchy problem for the modified Korteweg – de Vries equation ,

,

where initial data tends rapidly to different constants as :

Suppose that there exists a solution of this problem, which tends rapidly to these constants as By using the Riemann – Hilbert problem method and the steepest descent method we show that this solution has qualitatively different asymptotical behavior in different regions of half-plane. Namely, in the regions and the solution tends to initial constants, respectively. And in the middle region the solution takes the form of a modulated hyper-elliptic wave generated by an algebraic curve of the genus 2.

